

WHAT IS CLAIMED IS:

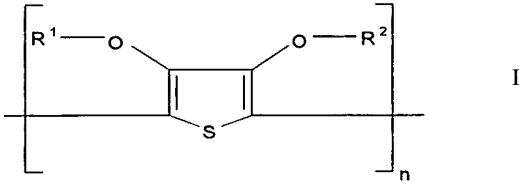
1. A transparent multilayer comprising a first conductive layer containing an intrinsically conductive polymer, a film forming binder, and spacer elements embedded in and projecting from the surface of the first conductive layer, and a second conductive layer separated from the first conductive layer by the spacer elements.
2. The multilayer of claim 1 wherein the intrinsically conductive polymer comprises at least one member selected from the group consisting of a substituted or unsubstituted polythiophene, polyaniline, polypyrrole, and poly(p-phenylene vinylene) compound.
3. The multilayer of claim 2 wherein the intrinsically conductive polymer is a polythiophene compound.
4. The multilayer of claim 3 wherein the intrinsically conductive polymer is a polyethylenedioxythiophene compound.
5. The multilayer of claim 1 wherein the spacers are microspheres.
6. The multilayer of claim 5 wherein the microspheres are not water-wettable.
7. The multilayer of claim 5 wherein the microspheres comprise a polymeric resin.
8. The multilayer of claim 5 wherein the microspheres comprise polyethylene or polytetrafluoroethylene.
9. The multilayer of claim 7 wherein the polymeric resin contains a cross-linked repeating unit.

10. The multilayer of claim 9 wherein the microspheres comprise a polymeric resin cross-linked with the film forming binder.

11. The multilayer of claim 8 wherein the polymeric resin contains an ethylenic repeating group.

12. The multilayer of claim 8 wherein the polymeric resin contains a repeating unit selected from styrenic and acrylic groups.

13. The multilayer of claim 4 wherein the polyethylenedioxythiophene polymer is represented Formula I wherein R₁ and R₂ are independently hydrogen or an alkyl, alkylenyl or cycloalkyl group having 1 to 4 carbon atoms, or together form a substituted or unsubstituted group or a substituted or unsubstituted 1,2-cyclohexylene group.

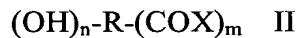


14. The multilayer of claim 13 additionally comprising a polyanion compound selected from the anions of polymeric polycarboxylic acids and polymeric polysulfonic acids.

15. The multilayer of claim 13 comprising a polyanion compound containing a polyacrylic acid, poly(methacrylic acid), poly(maleic acid), polystyrenesulfonic acid or a polyvinylsulfonic acid.

16. The multilayer of claim 1 additionally comprising a conductivity enhancing compound selected from polyhydroxy, polycarboxy, polyamide and polylactam compounds.

17. The multilayer of claim 16 wherein the conductivity enhancing compound is a sugar, a sugar derivative, a polyalkylene glycol, glycerol, or a compound represented by Formula II.



wherein m and n are independently an integer of from 1 to 20, R is an alkylene group having 2 to 20 carbon atoms, an arylene group having 6 to 14 carbon atoms in the arylene chain, a pyran group, or a furan group, and X is -OH or -NYZ, wherein Y and Z are independently hydrogen or an alkyl group.

18. The multilayer of claim 16 wherein the conductivity enhancing compound is N-methylpyrrolidone, pyrrolidone, caprolactam, N-methylcaprolactam, N-octylpyrrolidone, sucrose, glucose, fructose, lactose, sugar alcohol, 2-furan carboxylic acid, 3-furan carboxylic acid, sorbitol, glycol, ethylene glycol, glycerol, diethylene glycol, or triethylene glycol.

19. The multilayer of claim 1 wherein the film forming binder comprises gelatins, gelatin derivatives, maleic acid or maleic anhydride copolymers, cellulose derivatives (such as carboxymethyl cellulose, hydroxyethyl cellulose, cellulose acetate butyrate, diacetyl cellulose, and triacetyl cellulose), polyvinyl alcohol, and poly-N-vinylpyrrolidone, acrylates, methacrylates, acrylamides and methacrylamides, itaconic acid and its half-esters and diesters, styrenes, acrylonitrile and methacrylonitrile, vinyl acetates, vinyl ethers, vinyl and vinylidene halides, and olefins; polyurethanes, polyesterionomers; or polysiloxanes.

20. A touch screen, comprising;

- a) a flexible transparent cover sheet bearing a first conductive layer;
- b) a transparent substrate bearing a second conductive layer and located relative to the transparent substrate so that the first and second conductive layers face each other; and
- c) spacer elements extending between the conductive layers to prevent contact in the absence of external deformation;

wherein at least one of the first or second conductive layers comprises an intrinsically conductive polymer, a film forming binder, and spacer elements embedded in and projecting from the surface of the layer.

21. The screen of claim 20 wherein the spacer elements comprise microspheres.

22. The screen of claim 21 wherein the microspheres are not water-wettable.

23. A display device comprising an OLED and the screen of claim 20.

24. A display device of claim 23 wherein the transparent substrate is also a substrate of the OLED that emits light through the substrate.

25. A display device of claim 23 wherein the transparent substrate is also a cover of the OLED that emits light through the cover.

26. A method of making a touch screen display component of the type including a transparent substrate having a conductive layer, a flexible transparent cover sheet bearing a conductive layer, and spacer elements extending between the substrate and the cover sheet, comprising the steps of:

- a) providing a liquid coating medium containing an intrinsically conductive polymer, a film forming binder and spacer elements;

- b) coating the liquid coating medium on the substrate or the cover sheet and drying to form at least one of the conductive layers,
- c) providing the other conductive layer on the other of the substrate or the cover sheet, and
- d) joining the substrate and cover sheet with their conductive layers facing each other and the spacer elements extending there-between.

27. The method of claim 26, wherein the spacer elements are microspheres that are not water-wettable and comprise a polymer having ethylenic repeating units.

28. The method of claim 26, comprising the additional step of forming the coating on a transparent substrate of an OLED so that the OLED emits light through the substrate.

29. The method of claim 26, comprising the additional step of forming the coating on the transparent cover of an OLED so that the OLED emits light through the cover.

30. The touch screen of claim 20, wherein the spacer elements are embedded in the conductive layer on the flexible transparent cover sheet.

31. The touch screen of claim 20, wherein the spacer elements are embedded in the conductive layer on the transparent substrate.

32. The touch screen of claim 20, wherein the conductive layer comprising an intrinsically conductive polymer is present on both the transparent substrate and the flexible transparent cover sheet.

33. The method of claim 26, wherein the spacer elements are coated with the conductive layer comprising an intrinsically conductive polymer on the flexible transparent cover sheet.

34. The method of claim 26, wherein the spacer elements are coated with the conductive layer comprising an intrinsically conductive polymer on the transparent substrate.

35. The method of claim 26, wherein the conductive layer comprising an intrinsically conductive polymer is coated on both the transparent substrate and the flexible transparent cover sheet.

36. The method of claim 26, wherein the coated conductive layer is coated using spin coating.

37. The method of claim 26, wherein the coated conductive layer is coated using web coating.

38. The method of claim 26, wherein the coated conductive layer is coated using spray coating.

39. The method of claim 26, wherein the coated conductive layer is coated using electro-coating.

40. The multilayer of claim 1 additionally comprising a filtering compound capable of absorbing actinic radiation.

41. The screen of claim 20 wherein the layer containing an intrinsically conductive polymer and a film forming binder also contains a filtering compound capable of absorbing actinic radiation.